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Ref: 10CFR50.54(f)

CPSES-200301604
Log # TXX-03130

August 8, 2003

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO NRC BULLETIN 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER-REACTORS"

Gentlemen:

The attachment to this letter contains the TXU Generation Company LP (TXU Energy) response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors" dated June 9, 2003. This response addresses Option 2 of NRC Bulletin 2003-01 which requires a description of any interim compensatory measures that have been or will be implemented until an evaluation of the Emergency Core Cooling and Containment Spray Systems recirculation functions has been completed.

This communication contains the following new commitments which will be completed as noted:

Commitment Number	Commitment
27289	Shift Operations and Emergency Response Organization personnel training will be conducted on the technical nature of the bulletin and the impact to emergency response actions. The training will include a discussion of the potential ERG procedure changes and the associated interface between Control Room and Plant Staff personnel. The training will be accomplished before the next scheduled Unit 2 refueling outage (Fall 2003).
27290	Operations Training and ERG procedure changes are scheduled for the second quarter of 2004 to allow time for developing the necessary training material and simulator exercises.
27291	Training for appropriate station personnel will be developed and will focus on what each employee can do to minimize the possibility of degraded sump conditions, emphasizing FME and good housekeeping practices. This material will be added to the CPSES Contractor Admin Training program to ensure that temporary workers are aware of the issue.
27292	Permanent plant personnel will receive training in the form of Required Reading discussing FME and good housekeeping practices to minimize the possibility of degraded sump conditions. The schedule for implementation of this training is Fall 2003 prior to the scheduled refueling outage, 2RF07.
27293	Prior to the next refueling outage, site containment housekeeping expectations will be reviewed for possible enhancement that would place greater emphasis on collection and removal of latent fiber and particulate debris from readily transportable areas.
27294	Enhanced instrumentation to provide more definitive indication of sump performance is being evaluated under the site System Health and Corrective Action Programs. CPSES has targeted completion of the above described evaluation by the end of the second quarter of 2004.

Should you have any questions, please contact Mr. J. D. Seawright at (254) 897-0140.

I state under penalty of perjury that the foregoing is true and correct.

Executed on August 8, 2003

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC
Its General Partner

C. L. Terry
Senior Vice President and Principal Nuclear Officer

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

JDS/js

Attachments

c - T. P. Gwynn, Region IV
W. D. Johnson, Region IV
D. H. Jaffe, NRR
Resident Inspectors, CPSES

Response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors"

This response addresses Option 2 of the Requested Information in NRC Bulletin 2003-01. This response discusses: 1) interim compensatory measures that have been implemented, 2) interim compensatory measures that will be implemented, 3) measures discussed in the bulletin that will not be implemented and the justification for not implementing them, and 4) implementation schedule and basis for planned interim measures that are not implemented.

1) interim compensatory measures that have been implemented

BULLETIN SUGGESTED COMPENSATORY ACTION: more aggressive containment cleaning and increased foreign material controls

CPSES RESPONSE:

CPSES has already provided enhancements to the foreign material controls program prior to the issuance of this bulletin and has an established aggressive program for containment cleaning.

Foreign material exclusion (FME)

FME is controlled at CPSES by means of a station procedure, STA-625, "Foreign Material Exclusion." The procedure outlines good work practices for foreign material prevention throughout the plant. Accountability forms are utilized which document materials carried into and out of an FME area, including the containment building during at-power entries. Unrecoverable items are tracked under the corrective action program. The use of paper tags is prohibited inside the containment building during modes 1-4. Labels & signs are constructed of rigid plastic permanently secured using cable, cable ties, or adhesives. Employees are encouraged to minimize the amount of material brought into the containment building. The practice of discarding wrappers and any unneeded parts prior to entry into the plant radiation controlled area (RCA), including the containment building, has been very effective in reducing radwaste and reducing the likelihood of foreign material. During an NRC inspection (IR 50-445/98-03) in April 1998, foreign materials associated with screen repair activities were found within the Unit 1 containment recirculation sumps. Although the cause of this issue was the scheduling of the closeout inspection prior to the containment cleaning, further enhancements to the closeout inspection procedure have been added since that time frame to increase FME controls. Steps were also added instructing the closeout inspectors to use mirrors or remote monitoring cameras when available to inspect locations inaccessible due to ALARA concerns.

Containment cleaning

CPSES utilizes a post-outage inspection governed by site procedure OPT-305 "Containment Close Out Inspection." The inspection is tied to a mode restraint, required to be done at least once prior to entering Mode 4. This procedure verifies by visual inspection that no loose debris (e.g., rags, trash, clothing) is present in the containment which could be transported to the containment sumps and cause restriction of pump suction during Loss of Coolant Accident (LOCA) recirculation conditions. The stated purpose of the inspection is to assure that all accessible areas are free of loose debris which could be transported to the containment sump and restrict, during a LOCA, the pump suctions for the ECCS train(s) required to be OPERABLE. Material which cannot be removed is documented and evaluated prior to Mode 4 entry for its acceptability to remain in containment.

Coating inspections inside containment are performed each fuel cycle under site procedure EPG-5.01, "Engineering Support – Protective Coatings Program," (PCP). Coating deficiencies are evaluated using appropriate considerations, including the potential impact on plant equipment and operation, and corrected in a timely manner. These considerations include the potential impact on the containment emergency sumps.

Cleanliness standards are provided in site procedure STA-607, "Housekeeping Control." This procedure dictates the cleanliness standards throughout the plant, including the containment building. Good housekeeping practices which minimize dust and dirt are required for inside reactor containment.

The current housekeeping and containment closeout procedures maintain the CPSES containment buildings in a very clean condition. However, prior to the next refueling outage, site containment housekeeping expectations will be reviewed for possible enhancement that would place greater emphasis on collection and removal of latent fiber and particulate debris from transportable areas.

BULLETIN SUGGESTED COMPENSATORY ACTION: ensuring containment drainage paths are unblocked

CPSES RESPONSE:

Ensuring drain paths are unblocked is primarily controlled by the containment cleaning and FME requirements within the containment structure. The containment closeout inspection also ensures that debris and other miscellaneous materials do not jeopardize the performance of the sumps. Floor sleeves, as described in the FSAR Section 6.2.5, are located throughout the containment building. The floor sleeves, designed to ensure adequate hydrogen mixing after a LOCA, also serve as fluid

drains to the lower elevation. Many are raised slightly above the grade of the floor allowing debris to settle below the lip of the sleeve and liquid to pass through the sleeve. In addition, there are grating covered access openings at each elevation providing additional drainage paths. Curbs are located in strategic locations, primarily around the circumference of each floor where the seismic gap between the internal structure and the containment building provide the primary drain path for containment spray. These curbs further reduce the potential transport of debris from one elevation to another.

The refueling cavity drains are Locked Open in Modes 1-5 per the locked valve program. Procedure RFO-102, "Refueling Operation," closes the drain valves during refueling and ensures they are relocked open upon conclusion of activities. Procedure SOP-506, "Spent Fuel Pool Cooling and Cleaning System," contains lineup instructions for the valves identifying their requirement to be open in modes 1-5 and closed per RFO-102.

The placement of doors has been previously evaluated. Specifically, the four loop room wire mesh doors (one per room) are now locked closed during at-power operations to meet Locked High Radiation Area requirements. Loop rooms are interconnected in two pairs (Loops 1 and 4, and Loops 2 and 3) at elevation 812' such that each area is drained by two doors. The doors are located at elevation 808' such that significant blockage of both is quite unlikely but would cause the wire mesh doors to fail open. The evaluation determined that closing the doors did not present a credible risk to nuclear safety associated with ECCS starvation and did not significantly affect the performance of the containment recirculation sumps.

Based on the above discussion and existing plant processes, additional procedural modifications are not necessary as a result of this bulletin.

BULLETIN SUGGESTED COMPENSATORY ACTION: ensuring sump screens are free of adverse gaps and breaches

CPSES RESPONSE:

Comanche Peak procedure OPT-306, "Containment Sump Inspection" is used when restoring the recirculation sumps to operation following a plant outage. This procedure verifies operability of the containment sump and subsystems suction inlets by performing a visual inspection to verify that each ECCS train containment sump suction inlet is not restricted by debris, and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion. This procedure satisfies Technical Specification SR 3.5.2.8 and SR 3.5.3.1 (for SR 3.5.2.8) requirements. This inspection provides sufficient guidance to identify any existing sump screen damage. The plant corrective action program provides the mechanism

to report and repair any subsequent damage to the screens during maintenance or other containment activities.

In 1997, while performing a coating inspection inside the Unit 2 containment, some openings were observed in the containment sump trash rack support structures that appeared to be larger than licensing basis requirements. These openings were documented in a voluntary Licensee Event Report (LER), 446/97-004-01, via letter logged TXX-98148 dated June 8, 1998. Subsequent to finding openings in the Unit 2 containment sump trash racks, the Unit 1 containment sump trash racks were inspected. Openings were also found in the Unit 1 containment sump trash racks which did not meet the licensing basis requirements. The openings in both the Unit 1 and Unit 2 containment sump trash racks were repaired, inspected, and verified by Engineering to assure the work was satisfactorily completed.

Based on the above corrective actions as a result of the LER, no additional inspections of the containment sump screens for gaps and breaches are necessary as a result of this bulletin.

These repairs described above and inspections performed ensure that there are no openings through the sump enclosure boundaries.

2) interim compensatory measures that will be implemented

BULLETIN SUGGESTED COMPENSATORY ACTION: operator training on indications of and responses to sump clogging

CPSES RESPONSE:

The condition of and the indications of a degraded containment sump condition at CPSES have been reviewed for impact to operator training. Licensed Operator training includes the monitoring of operating ECCS and Containment Spray System pumps during the evolution for transfer to cold leg recirculation (EOS-1.3A/B, "Transfer to Cold Leg Recirculation") and hot leg recirculation (EOS-1.4A/B, "Transfer to Hot Leg Recirculation"). Additionally, operator training includes the recognition of indications of pump distress or loss of NPSH, such as erratic motor current, discharge flow or pressure.

Indications of pump cavitation or loss of NPSH (such as erratic motor current, discharge flow or pressure) can indicate a loss of or degraded suction supply, such as that caused by containment recirculation sump clogging. RHR Pump motor current and ECCS and Containment Spray Pump discharge flow and pressure can be monitored for indications of containment sump clogging following establishment of recirculation flow. Specific indications available for operators include:

Containment Recirculation Sump Level: Independent instrumentation channels provide MCB dual level indication from two sump level transmitters each indicating water level above containment floor / top of sump (elevation 808').

RHR Pump Motor Current: The motor current for each RHR pump is equipped with annunciation to notify the operator of motor current fluctuations of either pump. Motor current fluctuation is indicative of pump distress, thus providing the operator with an indication of a possible degraded sump condition.

RHR / CS Pump Flow: Two flow indicators are provided for RHR cold leg injection. One flow indicator is provided for RHR hot leg injection. Both cold leg injection flow indicators alarm a single annunciator in the event of a low flow occurrence. Each CS pump is equipped with a discharge flow indicator. Each flow indicator is equipped with a low flow alarm. Flow perturbations would be indications of a possible degraded sump condition.

RHR / CS Pump Discharge Pressure: Each RHR and CS pump is equipped with a discharge pressure indicator on the MCB. No alarms are associated with these indicators. Erratic discharge pressures of either pump would be indication of a possible degraded sump condition.

Licensed Operator training material is being modified to include the indications of sump clogging as part of the training administered for Emergency Response Guideline (ERG) performance of switchover activities.

EOS-1.3A/B instruction is being modified to provide an action to monitor indications of a degrading containment sump. Additional information is being included in the "Guidance for ERG Actions Requiring Plant Staff Evaluation" document to discuss potential response actions in the event a containment sump is determined to be degrading. ERG guidance being developed to address the containment sump clogging issue will be incorporated into Licensed Operator training. New instruction being added to EOS-1.3A/B to "monitor ECCS and Containment Spray System parameters to ensure the containment sump remains available," and the possible recovery actions that are available in ECA-1.1, "Loss of Emergency Recirculation Coolant," will also be included as part of the training. ERG actions do not directly attribute sump blockage as the cause for a loss of recirculation, but rather provide operator guidance to restore recirculation capability and maintain core cooling regardless of the initiating cause. Existing ECA-1.1A/B actions provide guidance, which results in reducing outflow from the RWST. The following actions may be taken to address degraded ECCS recirculation flow, which may be caused by the containment recirculation sump clogging:

- stopping Containment Spray pumps not needed for containment pressure control,
- reducing ECCS flow to the minimum required for decay heat removal,
- adding makeup to the RWST, and/or
- injecting makeup into the RCS from any available sources.

CPSES has targeted completion of the above described procedure changes and the associated operator training by the end of the second quarter of 2004.

As an interim compensatory measure, Shift Operations and Emergency Response Organization personnel training will be conducted on the technical nature of the bulletin and the impact to emergency response actions. The training will include a discussion of the pending ERG procedure changes and the associated interface between Control Room and plant staff personnel. This training will be accomplished by the next scheduled Unit 2 refueling outage (Fall 2003).

Additionally, the benefit of enhanced instrumentation to provide more definitive indication of sump performance is being evaluated under the site System Health and Corrective Action Programs. CPSES has targeted completion of the above described evaluation by the end of the second quarter of 2004.

BULLETIN SUGGESTED COMPENSATORY ACTION: ensuring that alternative water sources are available to refill the RWST or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere

CPSES RESPONSE:

Alternate sources to refill the RWST

The ERGs do not directly address indications of containment recirculation sump clogging. However, post accident response instructions to refill the RWST, once it has been determined a loss of ECCS recirculation capability exists, are provided in ECA-1.1A/B, "Loss of Emergency Coolant Recirculation."

EOS-1.3A/B, "Transfer to Cold Leg Recirculation," background information identifies that a "loss of flow' or "a large decrease in flow" indicates a suction flow path has not been properly established. Background information for ECA-1.1A/B discusses the loss of suction source due to "suction flow path blockage" as a reason to stop any pumps taking suction from the containment sump in order to prevent potential pump damage. When it is determined that a loss of both recirculation sump suction paths exists, a loss of emergency coolant recirculation is identified and the response actions of ECA-1.1A/B will be implemented. At that time, the action to fill the RWST from alternate sources is initiated.

EOS-1.3A/B instruction is being modified to provide an action to monitor indications of a degrading containment sump. The modified EOS-1.3A/B and ERG Network instructions identify that the plant staff (e.g., STA, TSC Engineering Team) may initiate refill of the RWST. Refill of the RWST via ECA-1.1A/B is initiated when a loss of emergency recirculation is identified. The controls associated with the new step to monitor recirculation sump indications identify the existing action in ECA-1.1A/B, which provides action to initiate refill the RWST. Refill of the RWST may be initiated as compensatory action when the monitoring action identifies sump conditions are degrading. Existing ECA-1.1A/B instructions may be referenced as guidance to initiate refill of the RWST via CVCS blended flow makeup, transfer of Spent Fuel Pool contents, or transfer of the opposite Unit's RWST.

CPSES has targeted completion of the above described procedure changes and associated operator training by the end of the second quarter of 2004.

Alternate sources to inject into the Reactor Coolant System

One of the results of a blocked containment recirculation sump is the reduction and eventually loss of RCS injection flow, which causes a loss of core-heat-removal safety function. ECA-1.1A/B, "Loss of Emergency Coolant Recirculation," provides instructions for aligning sources of RCS injection when the normal injection from ECCS pumps is not available.

EOS-1.3A/B, "Transfer to Cold Leg Recirculation," background information identifies that a "loss of flow" or "a large decrease in flow" indicates a suction flow path has not been properly established. Background information for ECA-1.1A/B discusses the loss of suction source due to "suction flow path blockage" as a reason to stop any pumps taking suction from the containment sump in order to prevent potential pump damage. When it is determined that a loss of both recirculation sump suction paths exists, a loss of emergency coolant recirculation is identified and the response actions of ECA-1.1A/B will be implemented. At that time, the action for injection from alternate sources is initiated.

EOS-1.3A/B instruction is being modified to provide an action to monitor indications of a degrading containment sump. The modified EOS-1.3A/B and ERG Network instructions identify that the Plant Staff (e.g., STA, TSC engineering team) may initiate alternate injection into the RCS. As identified above, alternate RCS injection via ECA-1.1A/B is initiated when a loss of emergency recirculation is identified. The controls associated with the new step to monitor recirculation sump indications identify the existing action in ECA-1.1A/B, which provides action to initiate alternate RCS injection. Alternate RCS injection from the RWST may be initiated as a compensatory action when monitoring determines sump conditions are degrading. Existing ECA-1.1A/B instructions may be referenced as guidance to

initiate injection to the RCS via normal charging flow from the CCP or Accumulator injection after the required RCS cooldown and depressurization has been performed.

CPSES has targeted completion of the above described procedure changes and the associated operator training by the end of the second quarter of 2004.

ADDITIONAL PLANT SPECIFIC MEASURES

Training will be developed to inform personnel of this Bulletin to enhance the station awareness of containment sump performance issues. The training will focus on what each employee can do to minimize the possibility of degraded sump conditions. The training will emphasize FME and good housekeeping practices. This material will be added to the CPSES Contractor Admin Training program to ensure that temporary workers are aware of the issue. Additionally, permanent plant personnel will also receive training in the form of Required Reading discussing this issue. The schedule for implementation of this training is Fall 2003 prior to the scheduled refueling outage, 2RF07.

3) measures discussed in the bulletin that will not be implemented and the justification for not implementing them

BULLETIN SUGGESTED COMPENSATORY ACTION: procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS intermittently)

CPSES RESPONSE:

Procedure actions that delay the switchover to containment sump recirculation

CPSES is actively participating in the Westinghouse Owners Group's (WOG) evaluation of possible procedure changes that will affect switchover. Until future ERG changes can be fully evaluated, the possibility for inadvertently increasing risk is real and undesirable. CPSES will consider changes once the WOG's evaluation has provided more information defining exactly what procedural changes reduce risk while improving sump performance. Additionally the WOG has put forth the following information as justification for this conclusion.

> Note, for larger LOCAs that require ECCS injection flow and CSS spray, pre-emptive operator actions to stop pumps or throttle flow solely for the purpose of delaying switchover to containment sump recirculation are not recommended until the impact of the changes can be evaluated on a generic basis for the following reasons:

- Operator actions to stop ECCS or CSS pumps or throttle flow may result in conditions that are either outside of the design basis safety analyses assumptions or violate the design basis safety analyses assumptions (single failure). This would result in the potential for creating conditions that would make the optimal recovery more challenging (e.g., stopping containment spray impacts containment fission product removal, containment sump pH and equipment environment qualification design basis requirements).

- These actions would be inconsistent with the overall WOG ERG philosophy. The WOG ERGs are symptom-based procedures that provide for the monitoring of plant parameters and prescribe actions based on the response of those parameters. To avoid the risk of taking an incorrect action for an actual event, the WOG ERGs do not prescribe contingency actions until symptoms that warrant those contingency actions are identified.

- These actions would be inconsistent with the current operator response using the WOG ERGs that has been established through extensive operator training. The expected operator response is based on the optimal set of actions considering both design basis accidents and accidents outside the design basis. The WOG ERG operator response is not limited to a specific accident progression in order to provide optimal guidance for a wide range of possible accidents.

- To be effective in delaying the switchover to containment sump recirculation, operator actions to stop ECCS or CSS pumps must be taken in the first few minutes of an accident. This introduces a significant opportunity for operator errors based on other actions that may be required during this time frame. Any new operator actions to stop ECCS or CSS pumps, when modeled in the PRA, are likely to result in increased risk due to operator error.

For small to medium LOCAs, guidance to delay depletion of the RWST before switchover to sump recirculation currently exists in WOG ERG ES-1.2, "Post LOCA Cooldown and Depressurization." This guideline provides actions to cooldown and depressurize the RCS to reduce the break flow, thereby reducing the injection flow necessary to maintain RCS subcooling and inventory. The operating SI pumps are sequentially stopped to reduce injection flow, based on pre-established criteria that maintain core cooling, resulting in less outflow from the RWST. For smaller LOCAs, it is possible to

cooldown and depressurize the RCS to cold shutdown conditions before the RWST is drained to the switchover level. Therefore cold leg recirculation is not required to be established, and sump blockage is not an issue.

Based on the philosophy adopted in the current WOG ERGs to take actions based on plant symptoms, it is more appropriate to address actions to "delay RWST inventory depletion" once the loss of recirculation capability is diagnosed. Any generic changes to the WOG ERGs will be evaluated as part of an Owners Group program.

Procedure actions that delay RWST inventory depletion

Guidance to delay depletion of the RWST after switchover to sump recirculation is currently contained in ECA-1.1A/B, "Loss of Emergency Coolant Recirculation." This guideline provides actions to reduce the outflow from the RWST to preserve the RWST inventory once it has been determined that a loss of sump recirculation capability exists. ECA-1.1A/B can be considered to determine the actions for delaying RWST inventory depletion, while ensuring that adequate core cooling flow and containment heat removal as necessary.

Any additional recommendations from the WOG may be considered for further changes to the ERGs at CPSES.

4) implementation schedule and basis for planned interim measures that are not implemented.

Operations Training and ERG procedure changes are scheduled for the second quarter of 2004 to allow time for developing the necessary training material and simulator exercises. Additional time is necessary due to Fall 2003 and Spring 2004 outages. This allows sufficient time to ensure a thorough Shift Operations and Engineering review of the compensatory actions being implemented to address the activity.

As an interim compensatory measure, Shift Operations and Emergency Response Organization personnel training will be conducted on the technical nature of the bulletin and the impact to emergency response actions. The training will include a discussion of the pending ERG procedure changes and the associated interface between Control Room and Plant Staff personnel. The training will be accomplished before the next scheduled Unit 2 refueling outage (Fall 2003).

Training will be developed and will focus on what each employee can do to minimize the possibility of degraded sump conditions, emphasizing FME and good housekeeping practices. This material will be added to the CPSES Contractor Admin Training

program to ensure that temporary workers are aware of the issue. Additionally, permanent plant personnel will also receive training in the form of Required Reading discussing this issue. The schedule for implementation of this training is Fall 2003 prior to the scheduled refueling outage, 2RF07.

Site containment housekeeping expectations will be reviewed for possible enhancement that would place greater emphasis on collection and removal of latent fiber and particulate debris from readily accessible areas. This review will be completed prior to the Unit 2 refueling outage this fall.

TXU Energy is evaluating enhanced instrumentation under the site System Health and Corrective Action Programs to provide more definitive indication of sump performance. CPSES has targeted completion of this evaluation by the end of the second quarter of 2004.